THE LEADING TECHNOLOGY IN STANDARDIZED TIMBER CONNECTION SYSTEMS

SIMPLY INGENIOUS

SHERPA CONNECTION SYSTEMS

SHERPA®

SHERPA POWER BASE - THE COLUMN BASE

Sherpa has extended the product range of column bases. As of now SHERPA offers seven Power Base types, which can be subdivided in the two following groups:

SHERPA Power Base C

- SHERPA Power Base L 130 C
- SHERPA Power Base L 140 C
- SHERPA Power Base XL 120 C
- SHERPA Power Base XL 140 C

SHERPA Power Base F

- SHERPA Power Base M 125 F
- SHERPA Power Base L 125 F
- SHERPA Power Base XL 95 F

Explanation of the denomination:

PB — **PB** - Power Base

L — M - adjustment area 90 bis 130 mm
L - adjustment area 150 bis 200 mm
XL - adjustment area 200 bis 300 mm

130 — z. B.: **130** = max. rated value of load-bearing capacity kN

C — **C** - "Cone" - divisible and adjustable under full load
F - "Flange" - adjustable under full load

EXAMPLE
„PB L 130 C“

Triple Protection

The high-quality triple protection against corrosion with a minimum thickness of 8 µm comprises the following layers:

- zinc-nickel coating
- transparent passivation
- sealing and sliding coating

Advantages

- Measurement value of the load-bearing capacity (Rd) at a centric pressure load of up to 140 kN
- The optimised screw arrangement prevents the breaking of the wood
- Zinc-nickel coating as protection against corrosion
- Simple mounting through separate head and base plate
- Also eccentric load-bearing capacity can be consideredr
- Height adjustment under load is possible
- No drilling or templates necessary
- Defined lift lock through screw plug
- Mountable on angular and round columns

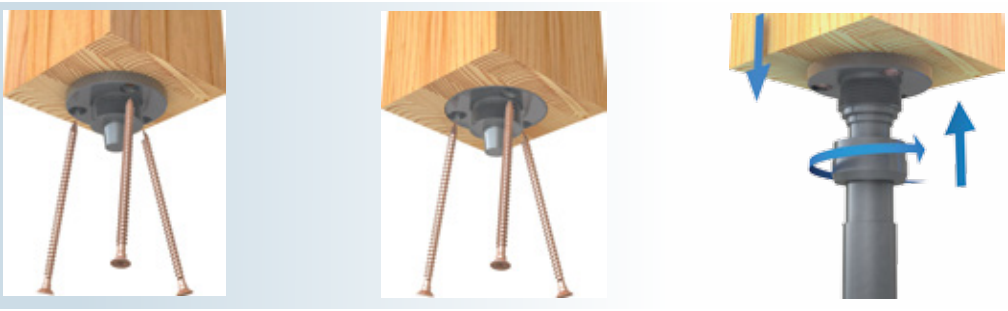
Screw connection

The proven SHERPA special screws are used also for the Power Base. Only that can guarantee the indicated load-bearing values. The high-quality zinc-nickel coating can be found –in addition to base columns - also on special screws. Thus, also in this area a long-lasting protection against corrosion is guaranteed.

ASSEMBLING OF THE POWER BASE C & F

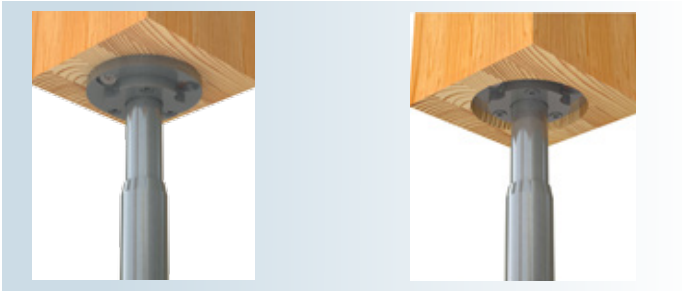
The SHERPA Power Base with a centre point and angular screw connection facilitates easy and precise assembly. The connection is suitable for supports made of solid wood and glued-laminated timber. The screws are placed such that they are invisible and weatherproof.

Mounting of the head plate of the Power Base C



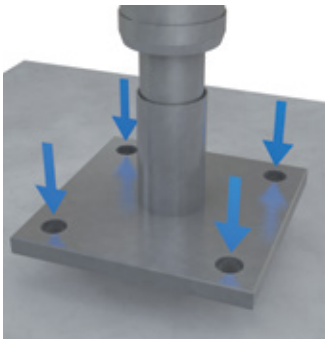
The end plate should be centered on the face and secured with three SHERPA special screws 8 x 160 or 8 x 180 mm at a 25° angle. Retracting the end plate into the support improves the protection of the structure of the wood (t= 12 mm / Ø 96 or Ø 106 mm).

Mounting of the head plate of the Power Base F



The head plate of the Power Base F corresponds basically to the one of the C-types. The differences lie in the disc thickness, which measures only 10 instead of 12 mm and in the type of closure to the substructure. Here, an additional flange ring is used, which is mounted to the head plate via three Allen screws. Disassembling is not crucial for the screwing to a column, but possible.

Assembling of the base plate of the Power Base C & F



The base plate is either anchored via four metal expansion bolts or concrete bolts. Manufacturing tolerances and settlements of the building can still be balanced under load. (open-end wrench: ..... Power Base C... 32 mm
Power Base F... 26 mm).

Possible height settings are:
M: 90 bis 130 mm
L: 150 bis 200 mm
XL: 200 bis 300 mm

The mounting of the base plate is identical for the Power Base C as well as the Power Base F. The mounting sequences of the Power Base C are shown in the picture.

Further information on the Power Base as well as the technical data sheet and the mounting instructions are available on our website or can be downloaded with the QR codes listed below.

Power Base C
technical data sheet / assembly instructions

Power Base F
technical data sheet / assembly instructions

height adjustment area		Maximum measurement value of the pressure bearing capacity		
		95 kN	120 -130 kN	140 kN
M	90 - 130 mm		PB M 125 F	
L	150 - 200 mm		PB L 125 F	PB L 140 C
			PB L 130 C	
XL	200 - 300 mm	PB XL 95 F	PB XL 120 C	PB XL 140 C

C - "Cone" - divisible and adjustable under full load

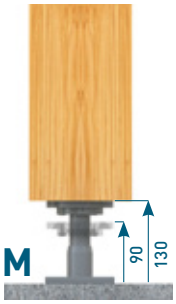
F - "Flange" - adjustable under full load

SHERPA POWER BASE M 125 F

Item #: 10000027943

SET:

- 1 pc. Power Base M 125 F
- 3 pcs. wooden screws 8 x 160 mm ZnNi



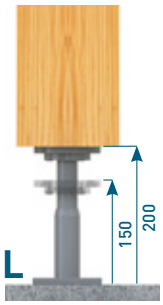
wooden screws	min. wood-dimension [mm]	end plate [mm]	base plate [mm]	drill base plate	$R_{1,d\ (pressure)\ -\ steel}$ [kN]	Set/sales unit [pc.]	storing (S)
3 pcs. 8 x 160 mm	120 x 120 / Ø 120	Ø 96	100 x 160	4 pcs. / Ø 15 mm	max. 125	5	S
3 pcs. 8 x 180 mm	140 x 140 / Ø 140						

SHERPA POWER BASE L 125 F

Item #: 10000027944

SET:

- 1 pc. Power Base L 125 F
- 3 pcs. wooden screws 8 x 160 mm ZnNi



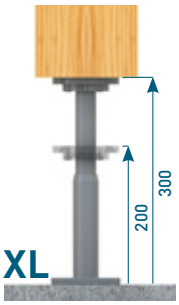
wooden screws	min. wood-dimension [mm]	end plate [mm]	base plate [mm]	drill base plate	$R_{1,d\ (pressure)\ -\ steel}$ [kN]	Set/sales unit [pc.]	storing (S)
3 pcs. 8 x 160 mm	120 x 120 / Ø 120	Ø 96	100 x 160	4 pcs. / Ø 15 mm	max. 125	5	S
3 pcs. 8 x 180 mm	140 x 140 / Ø 140						

SHERPA POWER BASE XL 95 F

Item #: 10000027945

SET:

- 1 pc. Power Base XL 95 F
- 3 pcs. wooden screws 8 x 160 mm ZnNi



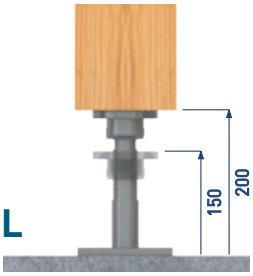
wooden screws	min. wood-dimension [mm]	end plate [mm]	base plate [mm]	drill base plate	$R_{1,d\ (pressure)\ -\ steel}$ [kN]	Set/sales unit [pc.]	storing (S)
3 pcs. 8 x 160 mm	120 x 120 / Ø 120	Ø 96	100 x 160	4 pcs. / Ø 15 mm	max. 95	5	S
3 pcs. 8 x 180 mm	140 x 140 / Ø 140						

SHERPA POWER BASE L 130 C

Item #: 10000026401

SET:

- 1 pc. Power Base L 130 C
- 3 pcs. wooden screws 8 x 160 mm ZnNi



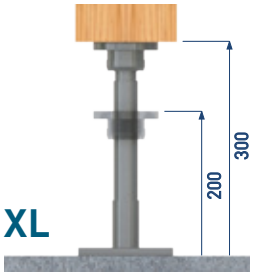
wooden screws	min. wood-dimension [mm]	end plate [mm]	base plate [mm]	drill base plate	$R_{1,d\ (pressure)\ -\ steel}$ [kN]	Set/sales unit [pc.]	storing (S)
3 pcs. 8 x 160 mm	120 x 120 / Ø 120	Ø 96	140 x 140	4 pcs. / Ø 15 mm	max. 129	5	S
3 pcs. 8 x 180 mm	140 x 140 / Ø 140						

SHERPA POWER BASE XL 120 C

Item #: 10000026402

SET:

- 1 pc. Power Base XL 120 C
- 3 pcs. wooden screws 8 x 160 mm ZnNi



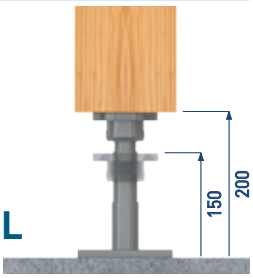
wooden screws	min. wood-dimension [mm]	end plate [mm]	base plate [mm]	drill base plate	$R_{1,d\ (pressure)\ -\ steel}$ [kN]	Set/sales unit [pc.]	storing (S)
3 pcs. 8 x 160 mm	120 x 120 / Ø 120	Ø 96	140 x 140	4 pcs. / Ø 15 mm	max. 120	5	S
3 pcs. 8 x 180 mm	140 x 140 / Ø 140						

SHERPA POWER BASE L 140 C

Item #: 10000028147

SET:

- 1 pc. Power Base L 140 C
- 3 pcs. wooden screws 8 x 160 mm ZnNi



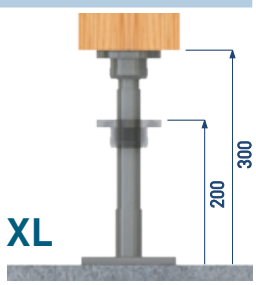
wooden screws	min. wood-dimension [mm]	end plate [mm]	base plate [mm]	drill base plate	$R_{1,d\ (pressure)\ -\ steel}$ [kN]	Set/sales unit [pc.]	storing (S)
3 pcs. 8 x 160 mm	120 x 120 / Ø 120	Ø 106	140 x 140	4 pcs. / Ø 15 mm	max. 138	5	S
3 pcs. 8 x 180 mm	140 x 140 / Ø 140						

SHERPA POWER BASE XL 140 C

Item #: 10000028148

SET:

- 1 pc. Power Base XL 140 C
- 3 pcs. wooden screws 8 x 160 mm ZnNi



wooden screws	min. wood-dimension [mm]	end plate [mm]	base plate [mm]	drill base plate	$R_{1,d\ (pressure)\ -\ steel}$ [kN]	Set/sales unit [pc.]	storing (S)
3 pcs. 8 x 160 mm	120 x 120 / Ø 120	Ø 106	140 x 140	4 pcs. / Ø 15 mm	max. 138	5	S
3 pcs. 8 x 180 mm	140 x 140 / Ø 140						

RESEARCH & DEVELOPMENT OF THE POWER BASE

In 2013 the SHERPA development team decided to create a new generation of column bases, which meets all standard expectations.

The following objectives were then defined:

- High bearing capacity with safety reserves through the use of the material
- Divisibility of the sub- and superstructure for easier handling
- Zinc-nickel coating for a reliable protection against corrosion
- Defined values of bearing capacity for all common types of loading

Together with our research partner, the Technical University Graz, the first drafts were evaluated and subsequently optimised. The core element in it was the head plate with the special screw connection and the two types of closure between the sub- and superstructure.

The base plate

This 10 or 12 mm thick disc with a diameter of 96 or 106 mm features several news concerning the connection of the base column. The spatial screwing with normally three pieces of 8.0 x 160 mm special screws, does not only guarantee secure bearing but provides also a very high load bearing capacity against lifting wind power. Through the three-dimensional slanted screw connection on one hand a maximum wood volume for the power transmission is included and on the other hand a cross pass reinforcement results as additional effect: The "spike" in the centre of the upper side is used as positioning support whereby all drilling and milling works before the mounting can be omitted.

The types of closure

To make the handling of our base columns easier for the user, practice-based mechanisms were developed for an easy disassembly. For economic reasons, we decided to use a standard and a premium version.

Power Base F – The standard version

The connection between the sub- and superstructure is carried out via a flange ring and three Allen bolts. The disassembly is not necessarily provided but basically possible. With this type of closure and the respective components, the load bearing values especially in case of lifting powers and transverse loads, are below those of the Power Base C –types. The following form part of it: PB M 125 F, PB L 125 F and PB XL 95F.

Power Base C – The premium version

The connection between the sub- and superstructure is carried out with the cap nut as screw closure whereas an ideal centring during the mounting is guaranteed through the cone of the head plate. With this type of closure and the respective components, the highest load bearing values can be obtained within the Power Base product range.

THE OVERALL CONCEPT

Through the balanced combination between head plate, types of closure, height adjustment areas and resulting load bearing values, to our mind all common connections to base columns can be realised with only seven Power Base types.

Loading test and failure mechanisms

To guarantee that our base columns can bear the existing loads in practice, respective tests were necessary which were carried out on a testing machine. These tests were realised at the Lignum Test Centre, located within the area of the Technical University Graz. Basically the following configurations were tested:

1. centric load under pressure without wooden section
2. transversal load without preload
3. transversal load with preload
4. centric tensile stress

The test configuration 3 simulates the commonly used combination of the vertical roof load and the horizontal wind power. With the additionally calculated moment load capacity also imperfect load applications under pressure can be evaluated.

1. centric load under pressure without wooden section

In this test we had to deal with a mere steel –steel configuration, since the Power Base was mounted immediately between the bearing bank and the test cylinder of the testing machine. Here different steel failures occurred like for example through the buckling or bulging as well as the stripping of the thread.

2. transversal load without preload

This test configuration provides a specific static bearing of the wooden column connected to the base column. Here we had to deal with a wood failure since the wooden screws were removed. The calculated value is valid only for a short loading period like for example for wind loads. For loads with a longer loading time respective reductions need to be applied.

3. centric tensile stress

The force transmission to the specimen was carried out via an engraved steel sheet, which on one side was connected to the machine via a bolt and on the other side via rod dowels to the wooden specimen. Here we had to deal with a wood failure since the wooden screws were removed.
The calculated value is valid only for a short loading period, for example the one assumed for wind loads.

authorized retailer

THE ADVANTAGES ARE OBVIOUS:

- MEASUREMENT VALUE OF THE LOAD-BEARING CAPACITY (Rd) AT A CENTRIC PRESSURE LOAD OF UP TO 140 KN
- THE OPTIMISED SCREW ARRANGEMENT PREVENTS THE BREAKING OF THE WOOD
- ZINC-NICKEL COATING FOR A RELIABLE PROTECTION AGAINST CORROSION

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